AMENDMENTS TO THE CLAIMS

1 - 9. (canceled)

10. (currently amended) ~~The mode-locked laser according to claim 2, characterized by further comprising:~~ A mode-locked laser comprising:

a master laser which generates master laser light;

a mode-locked laser section including at least a modulating section, an amplifying section, and a bandwidth limiting section in an optical resonator, the bandwidth limiting section reducing mode partition noise;

a signal generating section which generates a periodic signal serving for mode locking of said mode-locked laser section and to be applied to said modulating section, wherein

said master laser light is input to the optical resonator of said mode-locked laser section to cause injection locking;

said modulating section is one of an electro-absorption modulator and a saturable absorption modulator;

a modulating section average current measuring section which detects an average current flowing through the modulating section of said mode-locked laser section; and

an optical resonator length control section which controls an optical path length of the optical resonator of said mode-locked laser section, wherein

said optical resonator length control section controls the optical path length of the optical resonator so that the average current measured by said modulating section average current measuring section is to be smaller than an average current that flows when no master laser light is input to said mode-locked laser section.

11. (original) The mode-locked laser according to claim 10, characterized in that said optical resonator length control section controls the optical path length of the optical resonator so that the average current measured by said modulating section average current measuring section is to be smaller than or equal to 90% of the average current that flows when no master laser light is input to said mode-locked laser section.

12. (currently amended) ~~The mode-locked laser according to claim 1, characterized by further comprising:~~ A mode-locked laser comprising:

a master laser which generates master laser light;

a mode-locked laser section including at least a modulating section, an amplifying section, and a bandwidth limiting section in an optical resonator, the bandwidth limiting section reducing mode partition noise;

a signal generating section which generates a periodic signal serving for mode locking of said mode-locked laser section and to be applied to said modulating section, wherein

said master laser light is input to the optical resonator of said mode-locked laser section to cause injection locking;

an optical intensity measuring section which detects average optical intensity of optical output of said mode-locked laser section; and

an optical resonator length control section which controls an optical path length of the optical resonator of said mode-locked laser section, wherein

said optical resonator length control section controls the optical path length of the optical resonator so that the average optical intensity measured by said optical intensity measuring section is to be higher than average optical intensity that occurs when no master laser light is input to said mode-locked laser section.

13. (original) The mode-locked laser according to claim 12, characterized in that

said optical resonator length control section controls the optical path length of the optical resonator so that the average optical intensity measured by said optical intensity measuring section is to be higher than or equal to 105% of the average optical intensity that occurs when no master laser light is input to said mode-locked laser section.

14. (currently amended) ~~The mode-locked laser according to claim 1, characterized by further comprising:~~ A mode-locked laser comprising:

a master laser which generates master laser light;

a mode-locked laser section including at least a modulating section, an amplifying section, and a bandwidth limiting section in an optical resonator, the bandwidth limiting section reducing mode partition noise;

a signal generating section which generates a periodic signal serving for mode locking of said mode-locked laser section and to be applied to said modulating section, wherein

said master laser light is input to the optical resonator of said mode-locked laser section to cause injection locking;

a linewidth measuring part which detects a linewidth of a longitudinal mode included in optical output of said mode-locked laser section; and

an optical resonator length control section which controls an optical path length of the optical resonator of said mode-locked laser section, wherein

said optical resonator length control section controls the optical path length of the optical resonator so that the linewidth of the longitudinal mode measured by said linewidth measuring part is to be minimum.

15. (currently amended) ~~The mode-locked laser according to claim 1, characterized by further comprising:~~ A mode-locked laser comprising:

a master laser which generates master laser light;

a mode-locked laser section including at least a modulating section, an amplifying section, and a bandwidth limiting section in an optical resonator, the bandwidth limiting section reducing mode partition noise;

a signal generating section which generates a periodic signal serving for mode locking of said mode-locked laser section and to be applied to said modulating section, wherein

said master laser light is input to the optical resonator of said mode-locked laser section to cause injection locking;

a linewidth measuring part which detects a linewidth of a beat note of said master laser light and a longitudinal mode included in optical output of said mode-locked laser section; and

an optical resonator length control section which controls an optical path length of the optical resonator of said mode-locked laser section, wherein

said optical resonator length control section controls the optical path length of the optical resonator so that the linewidth of the beat note measured by said linewidth measuring part is to be minimum.

16. (currently amended) ~~The mode-locked laser according to claim 1, characterized by further comprising:~~ A mode-locked laser comprising:

a master laser which generates master laser light;

a mode-locked laser section including at least a modulating section, an amplifying section, and a bandwidth limiting section in an optical resonator, the bandwidth limiting section reducing mode partition noise;

a signal generating section which generates a periodic signal serving for mode locking of said mode-locked laser section and to be applied to said modulating section, wherein

said master laser light is input to the optical resonator of said mode-locked laser section to cause injection locking;

a CNR measuring part which detects a CNR of a longitudinal mode included in optical output of said mode-locked laser section: and

an optical resonator length control section which controls an optical path length of the optical resonator of said mode-locked laser section, wherein

said optical resonator length control section controls the optical path length of the optical resonator so that the CNR of the longitudinal mode measured by said CNR measuring part is to be maximum.

17. (original) ~~The mode-locked laser according to claim 1, characterized by further comprising:~~ A mode-locked laser comprising:

a master laser which generates master laser light;

a mode-locked laser section including at least a modulating section, an amplifying section, and a bandwidth limiting section in an optical resonator, the bandwidth limiting section reducing mode partition noise;

a signal generating section which generates a periodic signal serving for mode locking of said mode-locked laser section and to be applied to said modulating section, wherein

said master laser light is input to the optical resonator of said mode-locked laser section to cause injection locking;

a CNR/intensity measuring part which detects a CNR or intensity of a beat note of said master laser light and a longitudinal mode included in optical output of said mode-locked laser section; and

an optical resonator length control section which controls an optical path length of the optical resonator of said mode-locked laser section, wherein

said optical resonator length control section controls the optical path length of the optical resonator so that the CNR or intensity of the beat note measured by said ~~linewidth~~ CNR/intensity measuring part is to be maximum or highest.

18. (canceled)

19. (currently amended) An optical multi-carrier source ~~characterized by comprising:~~

~~said mode-locked laser according to claim 1~~; employing a mode-locked laser comprising:

a master laser which generates master laser light;

a mode-locked laser section including at least a modulating section, an amplifying section, and a bandwidth limiting section in an optical resonator, the bandwidth limiting section reducing mode partition noise;

a signal generating section which generates a periodic signal serving for mode locking of said mode-locked laser section and to be applied to said modulating section, wherein

said master laser light is input to the optical resonator of said mode-locked laser section to cause injection locking;

a waveguided optical nonlinear medium which receives optical output of said mode-locked laser and outputs optical multi-carrier that is generated by broadening a spectrum of the optical output of the mode-locked laser:

a linewidth measuring part which detects a linewidth of an optical carrier included in optical output of said waveguided optical nonlinear medium; and

an optical resonator length control section which controls an optical path length of the optical resonator of said mode-locked laser section, wherein

said optical resonator length control section controls the optical path length of the optical resonator so that the linewidth of the optical carrier measured by said linewidth measuring part is to be minimum.

20. (currently amended) An optical multi-carrier source ~~characterized by comprising:~~

~~the mode-locked laser according to claim 1~~; employing a mode-locked laser comprising:

a master laser which generates master laser light;

a mode-locked laser section including at least a modulating section, an amplifying section, and a bandwidth limiting section in an optical resonator, the bandwidth limiting section reducing mode partition noise;

a signal generating section which generates a periodic signal serving for mode locking of said mode-locked laser section and to be applied to said modulating section, wherein

said master laser light is input to the optical resonator of said mode-locked laser section to cause injection locking;

a waveguided optical nonlinear medium which receives optical output of said mode-locked laser and outputs optical multi-carrier that is generated by broadening a spectrum width of said optical output;

a linewidth measuring part which detects a linewidth of a beat note of said master laser light and an optical carrier included in optical output of said waveguided optical nonlinear medium; and

an optical resonator length control section which controls an optical path length of the optical resonator of said mode-locked laser section, wherein

said optical resonator length control section controls the optical path length of the optical resonator so that the linewidth of the beat note measured by said linewidth measuring part is to be minimum.

21. (currently amended) An optical multi-carrier source ~~characterized by comprising:~~

~~the mode-locked laser according to claim 1;~~ employing a mode-locked laser comprising:

a master laser which generates master laser light;

a mode-locked laser section including at least a modulating section, an amplifying section, and a bandwidth limiting section in an optical resonator, the bandwidth limiting section reducing mode partition noise;

a signal generating section which generates a periodic signal serving for mode locking of said mode-locked laser section and to be applied to said modulating section, wherein

said master laser light is input to the optical resonator of said mode-locked laser section to cause injection locking;

a waveguided optical nonlinear medium which receives optical output of said mode-locked laser and outputs optical multi-carrier that is generated by broadening a spectrum of the optical output of the mode-locked laser;

a CNR measuring part which detects a CNR of an optical carrier included in optical output of said waveguided optical nonlinear medium; and

an optical resonator length control section which controls an optical path length of the optical resonator of said mode-locked laser section, wherein

said optical resonator length control section controls the optical path length of the optical resonator so that the CNR of the optical carrier measured by said CNR measuring part is to be maximum.

22. (currently amended) An optical multi-carrier source ~~characterized by comprising:~~

~~the mode-locked laser according to claim 1;~~ employing a mode-locked laser comprising:

a master laser which generates master laser light;

a mode-locked laser section including at least a modulating section, an amplifying section, and a bandwidth limiting section in an optical resonator, the bandwidth limiting section reducing mode partition noise;

a signal generating section which generates a periodic signal serving for mode locking of said mode-locked laser section and to be applied to said modulating section, wherein

said master laser light is input to the optical resonator of said mode-locked laser section to cause injection locking;

a waveguided optical nonlinear medium which receives optical output of said mode-locked laser and outputs optical multi-carrier that is generated by broadening a spectrum of the optical output of the mode-locked laser:

a CNR/intensity measuring part which detects a CNR or intensity of a beat note of said master laser light and an optical carrier included in optical output of said waveguided optical nonlinear medium: and

an optical resonator length control section which controls an optical path length of the optical resonator of said mode-locked laser section, wherein

said optical resonator length control section controls the optical path length of the optical resonator so that the CNR or intensity of the beat note measured by said ~~linewidth~~ CNR/intensity measuring part is to be maximum or highest.

23. (currently amended) The optical multi-carrier source according to any one of claims [[~~18~~]]19 to 22, characterized in that

said waveguided optical nonlinear medium has, in all or part of its length, such a characteristic that a dispersion (unit: ps/nm/km) at an average wavelength of the optical output of said mode-locked laser exhibits a positive-to-negative decrease.

24. (currently amended) The optical multi-carrier source according to any one of claims [[~~18~~]] 19 to 22, characterized in that

said waveguided optical nonlinear medium has, in all or part of its length, such a characteristic that a wavelength dispersion characteristic is represented by a convex function.

25. (currently amended) The optical multi-carrier source according to any one of claims [[~~18~~]] 19 to 22, characterized in that

said waveguided optical nonlinear medium has, in all or part of its length, such a characteristic that a dispersion (unit: ps/nm/km) at an average wavelength of the optical output of said mode-locked laser varies between 0 and -0.5 (ps/nm/km) and that a wavelength dispersion characteristic is represented by a convex function.

26. (currently amended) The optical multi-carrier source according to any one of claims [[~~18~~]] 19 to 22, characterized in that

said waveguided optical nonlinear medium is a holey fiber in which an absolute value of a dispersion slope at an average wavelength of said optical output of said mode-locked laser is 0.1 (ps/nm^2/km) or less and a nonlinear coefficient γ is 10 ($W^{-1}km^{-1}$) or more.

27. (currently amended) The optical multi-carrier source according to any one of claims [[~~18~~]] 19 to 22, characterized by further comprising

an optical amplifier disposed between said mode-locked laser and said waveguided optical nonlinear medium.

28. (currently amended) The optical multi-carrier source according to any one of claims [[~~18~~]] 19 to 22, characterized by further comprising

an optical pulse compressor disposed between said mode-locked laser and said waveguided optical nonlinear medium, and shortening a temporal duration of the optical output of said mode-locked laser.

29. (currently amended) The optical multi-carrier source according to any one of claims [[~~18~~]] 19 to 22, characterized in that components of said optical multi-carrier source maintain optical polarization.